OH-60-06

ecology and environment, inc.
223 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60606, TEL. 312-663-9415
International Specialists in the Environmental Sciences

DATE: September 22, 1980

TO: Rene Van Someren

FROM: John R. Angelo

RE: Ohio/TDD# F5-8009-3 (Ohio Eckhart)
Marietta/American Cyanamid

On September 17, 1980, an on-site investigation was performed at the American Cyanamid plant in Marietta, Ohio. Claude Mays, Cindy Bachunas, Randy Livingston, Dan Cozza and myself were the team members with Dan Cozza and myself as the site entry team. We conducted our investigation with Mike Moschell of OEPA-SEDO, R. F. Bann - plant manager and J. Innes - Technical Director for American Cyanamid.

Before the on-site investigation, a meeting was held between Mr. Innes, Mr. Bann, Mike Moschell and myself to review and sign a statement of confidentially which has been approved by the USEPA and used at other sites, and to discuss what areas of the plant would be investigated.

After all members of the team signed the statement of confidentially, the investigation began with a secondary lagoon, approximately 4 acres in size, designed for the settling of solids from a treated liquid waste. The lagoon described by Mr. Innes, was receiving treated liquid waste with the primary pollutant being rhodaming dye. Once the solids have settled, the liquid is discharged into the city sewer system. The embankment surrounding the lagoon appeared to be stable and was covered over with grass except for near the liquid's edge where the vegetation had been blackened and has died. An Industrial Impoundment Hydrogeologic Assessment of the area indicates that the soil layer is very thin to none with red silty clay present in small amounts. Also, secondary treatment pond corings indicate a 20' to 50' thick sandstone bottom with a serious groundwater contamination potential. [Mr. Innes stated that to the best of his knowledge, the lagoon has never been dredged of solids.] The Assessment also states that the depth of the water table is 20 feet.

The open dump area was described as containing filter cake material, metal and fibre containers, solid steel residue and general plant refuse. The 1 acre dump has been capped with a 1' clay layer which was seeded, (did not take hold) and is now eroding. Straw had been spread over the site to help prevent eroding, but deep grooves in the soil are developing. A leachate collection system was installed but was not pumping at the time of the investigation. Drainage from the dump is retained by an earthen dam and then pumped to the secondary treatment lagoon by a float-controlled submerged pump. There the solids settle and the liquid is discharged along with the liquid from the secondary treatment lagoon into the sewer.

A fresh water pond used for process cooling was also investigated. The pond was approximately 2 acres in size, and green in color presumably due to algal growth. American Cyanamid treats the cooling water with copper at a limit of 0.5 ppm to prevent algal growth. American Cyanamid was granted a permit from the OEPA for discharging non-contact cooling waters with copper content not to exceed 0.5 mg/l.

The primary treatment lagoon was then investigated. The lagoon was red in color with an oil sheen and settled solids were visable. Liquid effluent is first treated with sodium bicarbonate to neutralize the acids, then the liquids are allowed to flow into the primary treatment lagoon to settle out the solids. The liquid portion of the primary treatment lagoon is then pumped to the secondary treatment lagoon for further settling. The liquid portion is then discharged into the city sewer system. Mr. Innes stated that there are no records of when the primary lagoon first went into operation or of the geologic stability of the lagoon.

The entry team investigated a building in the SE corner of the site where liquid wastes were being stored. The site entry team did not enter this building because of the possibility of an explosion and because of the lack of a life supporting atmosphere. Approximately 75 drums of unknown waste were being stored in a building that had little or no air exchange with the outside. This type of situation may pose an explosion hazard if the drums are ruptured and the contents are volatile.

American Cyanamid has had a negative effect on the treatment capacity of the waste water treatment facility in Marietta. In a letter from William West of the OEPA to James Schweikert, Mayor of Marietta dated May 5, 1972, Mr. West states that "High concentrations of ammonia are discharged from the Marietta Sewage Treatment Plant to the Ohio River. Most of the ammonia is attributed to the American Cyanamid effluent. The concentration of ammonia ... in the American Cyanamid effluent to the sewer was 720 mg/l while the concentration in the sewer above American Cyanamid was only 16 mg/l. This concentration is extremely toxic to aquivate life. The high concentration of ammonia has the treatment plant unable to retain a chlorine residual." The letter continues by saying, "...American Cyanamid wastes are being inadequately treated but that the degree of treatment previously afforded the City of Marietta waste waters has been decreased." American Cyanamid reportedly employs ammonia as part of this pH pretreatment before effluent is discharged into the city sewer.

It should also be stated that a leachate/groundwater analysis was performed in February 1977. The results of that analysis are as follows:

BOD	360 ppm
COD	1740 ppm
TOC	1740 ppm
pH	7.7
TSS	66 ppm

All levels recorded were high except for pH. The effluent from American Cyanamid has had a history of pH fluctuations ranging from 4.0 to 10.3.

According to the Chief Sanitarian at the City of Marietta Health Department, Frank Weatherhold and Chemist S. Parker of the Marietta Treatment Plant, no analysis has been performed on the American Cyanamid treatment lagoons by the City Health Department. The only analysis performed is one of BOD, COD, TOC, pH and TSS on Cyanamid's effluent. No analysis for organics or toxic metals of the treatment lagoons or the plant effluent has been performed.

It should also be noted that a spill of dimethyl aniline occured on 4/28/71. This highly toxic substance found its way into a drainage ditch which empties into Duck Creek which in turn empties into the Ohio River two miles from the plant.

In light of the previous discussion, it is suggested that the USEPA require American Cyanamid to respond to a 308 letter, and then make the following recommendations to them for both the primary and secondary treatment lagoons:

1) Sampling of liquids in treatment lagoons to determine chemical composition.

2) Sampling of settled solids in treatment lagoons to determine chemical composition.

3) Analysis of soil near lagoons to determine extent of contamination and migration by contaminants.

4) Installation of artificial or clay liner in lagoons to contain liquids.

5) Installation of a more adequate pretreatment system to maintain plant effluent at permitted discharge standards.

6) Adequate and safe disposal of pretreatment sludge.

7) Installation of monitoring wells upgradient and downgradient of site.

For the closed dump area at American Cyanamid the following is recommended:

1) Sampling of leachate from dump site to determine chemical composition.

2) Sampling of soil surrounding dump to determine extent of contamination and migration by contaminants.

3) Installation of monitoring wells near dump area.

4) Containment, treatment and/or disposal of leachate in accordance with sound environmental practices.

5) Addition of 1' to 2' clay cover to ensure proper cover.

6) Seeding of cover to prevent erosion.

It is also recommended that all wastes be removed from closed buildings and treated/disposed of in accordance with sound environmental practices.

When these recommendations are made to the industry they should include the requirements outlined in RCRA under Part 265 - "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities" for the appropriate subparts if the waste is determined to be hazardous as defined by RCRA.

JRA/df

OH-GEN-60-09

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